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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,005	09/27/2001	David F. Craddock	AUS920010491US1	2735

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EXAMINER

NGUYEN, VAN H

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/965,005

Applicant(s)

CRADDOCK ET AL.

Examiner

VAN H NGUYEN

Art Unit

2126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. Claims 1-19 are presented for examination.

Claim Objections

2. Claims 7 and 14 are objected to because of the following informalities: the **abbreviations** used in these claims should be defined.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following phrases lack antecedent basis:

(i) the multi-function chip (claim 1, lines 6-7; claim 11, line 8; and claim 19, line

7)

(ii) the virtual router (claim 1, line 8; claim 11, line 8; and claim 19, lines 7-8)

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- B. The phrase “virtual router” (claim 1, lines 13-14; claim 11, lines 13-14; and claim 19, lines 12-13) is indefinite.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made

5. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Petty et al.** (U.S. 6,594,712) in view of **Acharya et al.** (U.S. 6,459,698).

6. As to claim 1, Petty teaches the invention substantially as claimed including a method for partitioning a computer network end node (col. 6, lines 14-29), the method comprising:

- virtualizing a plurality of network devices on a single multi-function chip by means of a combination of hardware and software (col.6, lines 20-47 and fig.1); and

- virtualizing at least one router on the multi-function chip by means of a combination of hardware and software (col.6, lines 22-27 and fig.1), wherein the virtual router performs control-flow processing for the virtual network devices (col. 6, lines 23-38 and figs. 7a-7b);

wherein the virtual network devices and virtual router form a virtual subnet (col.6, lines 31-38).

Petty does not explicitly teaches the virtual router functions of destination lookup and packet forwarding are incurred only on control-flow processing.

Acharya teaches the virtual router functions of destination lookup and packet forwarding are incurred only on control-flow processing (abstract and col.2, lines 22-35).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Acharya and Petty because Acharya's teaching would have provided the capability for efficiently sending and receiving data packets on an Infiniband network according to the determined service level.

6. As to claim 2, Petty teaches the virtual network devices are host channel adapters (e.g., host channel adapters; col.6, lines 20-24 and fig.1).

6. As to claim 3, Petty teaches the virtual network devices are target channel adapters (e.g., target channel adapter; col.6, lines 55-65 and fig.2).

6. As to claim 4, Petty teaches further comprising assigning unique identifiers to the virtual network devices (col.11, lines 1-17).

6. As to claim 5, Petty teaches virtualizing a plurality of subnets on the multi-function chip by means of software (col.6, lines 31-38).

6. As to claim 6, Petty teaches registering the virtual subnet with a physical subnet (col.7, lines 52-65).

6. As to claim 7, Petty teaches the physical subnet perceives the multi-function chip as only a single router with multiple HCAs residing behind it (e.g., IB router and IB HCAs fig.1).

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6. As to claim 8, Pettey teaches nodes in the physical subnet communicate with the virtual subnet through the virtual router (fig.1 and associated text).
6. As to claim 9, Pettey teaches the multi-function chip provides resource configuration and allocation interface that allow software, firmware and hardware state machines to set an operating policy for the virtual devices (col.11, lines 37-53 and col.12, line 24-45).
6. As to claim 10, Pettey teaches the multi-function chip provides standard device functions directly to the virtual devices by means of physical queue pairs even though those devices logically reside behind a virtual router (col.10, lines 57-col.11, line 7).
7. As to claims 11-18, note the rejection of claims 1-8 above. Claims 11-18 are the same as claims 1-8, except claims 11-18 are computer program product claims and claims 1-8 are method claims.
7. As to claim 19, note the rejection of claim 1 above. Claim 19 is the same as claim 1, except claims 19 is a system claim and claim 1 is a method claim.

Conclusion

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Dearth et al. (U.S. 6744765) teaches "Mechanism for completing messages in memory."

- Beukema et al. (U.S. 6578122) teaches "Using an access key to protect and point to regions in windows for infiniband."

- Kashyap (U.S. 6438128) teaches "Alternate use of data packet fields to convey information."

- Nagami et al. (U.S. 5822319) teaches "Router device and datagram transfer method for data communication network system."

- Sancho et al. "Effective strategy to compute forwarding tables for infiniband network" 2001 IEEE, pp. 48-57 (publication date: Sep. 3-7, 2001).

- Lopez et al. "Deadlock-free routing in infiniband through destination renaming" 2001 IEEE, pp. 427-434 (publication date: Sep. 3-7, 2001).


29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to VAN H NGUYEN whose telephone number is (703) 306-5971. The examiner can normally be reached on Monday-Thursday from 8:30AM - 6:00PM. The examiner can also be reached on alternative Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703) 305-9678.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VHN


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